

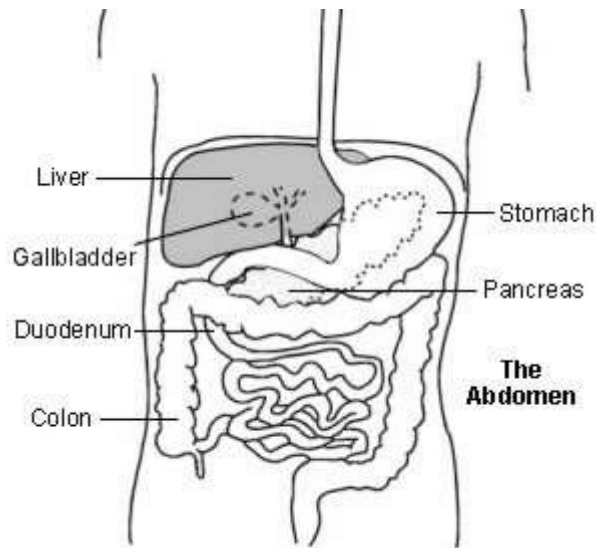
# Jaundice

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Jaundice means that your skin and other body parts turn a yellow colour. Always see a doctor if you become jaundiced, as it is vital to diagnose the cause. The treatment and outlook (prognosis) depend on the cause.

## What is jaundice?

### Diagram showing the liver



Jaundice is due to a build-up of a chemical called bilirubin in the tissues of the body. Bilirubin is a normal body chemical but can build up to abnormally high levels in various diseases.

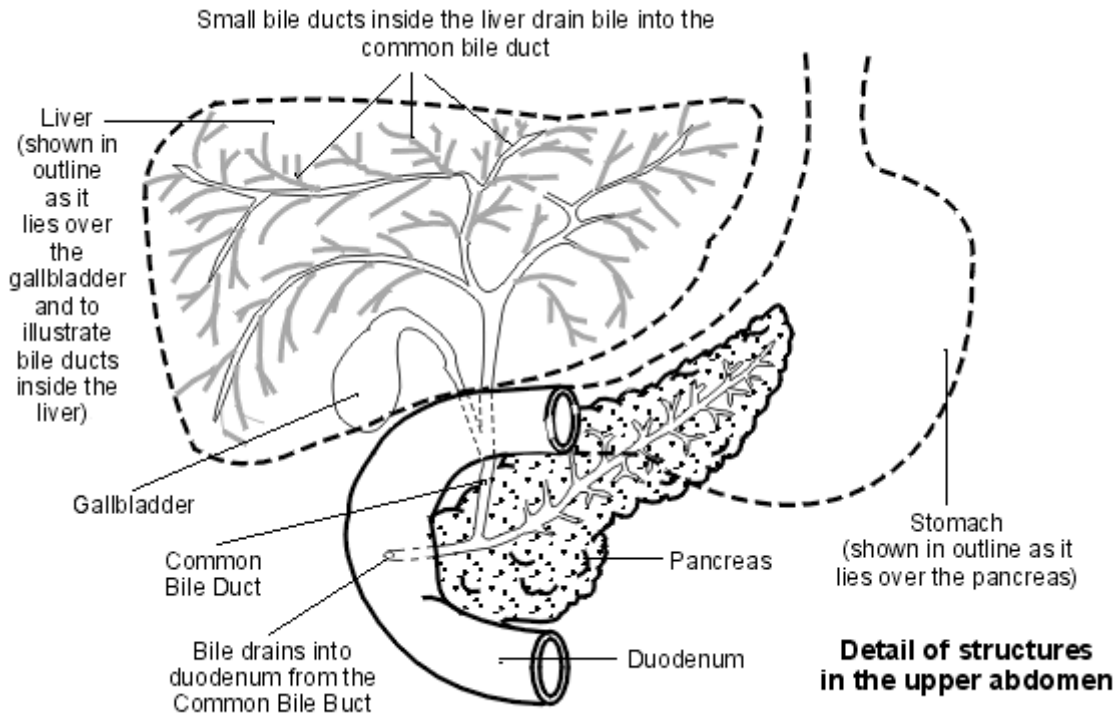
## Jaundice



## Understanding bilirubin – the cause of the yellow colour

You have millions of red blood cells in your bloodstream. Each blood cell lasts for about 120 days and is then broken down by cells in the body into various waste chemicals. (New red blood cells are being made all the time to replace the ones being broken down.) Bilirubin is one of the chemicals that comes from the broken down red cells.

# Upper abdomen showing bile ducts



Bilirubin is carried around the bloodstream. As the blood flows through the liver, the liver cells take up the bilirubin. Chemicals in the liver cells slightly alter the structure of the bilirubin to make it water-soluble. This water-soluble bilirubin is called conjugated bilirubin. (The bilirubin in the blood before being taken up by liver cells is called unconjugated bilirubin.)

The liver cells pass out the conjugated bilirubin into tiny tubes called bile ducts. The bilirubin is therefore now part of bile. Bile is a mix of various waste chemicals passed out by the liver cells. (One function of liver cells is to get rid of a range of waste chemicals in the bile.)

There is a network of bile ducts in the liver. They join together (like branches of a tree) to form the larger common bile duct. Bile constantly drips down the tiny bile ducts, into the common bile duct and into the first part of the gut (small intestine), known as the duodenum.

The gallbladder lies under the liver. It is like a pouch off the common bile duct, which stores bile. The gallbladder squeezes (contracts) when we eat. This empties the stored bile back into the common bile duct and out into the duodenum. The bilirubin in the bile gives the stools (faeces) their typical brown colour.

So, getting rid of bilirubin is a normal process. It is when abnormal amounts of bilirubin build up in the blood that you become jaundiced. And this can happen for many different reasons.

# Jaundice causes

It is useful to divide the causes of jaundice into four general areas:

- Conditions affecting the red blood cells.
- Conditions affecting the liver cells.
- Conditions affecting the tiny bile ducts within the liver.
- Conditions affecting the common bile duct outside the liver.

## Conditions affecting the red blood cells

Various conditions cause an increased rate of breakdown of red blood cells. As a result, there is more bilirubin made than usual which then circulates in the blood. The liver cells are unable to keep pace and process the extra bilirubin. Therefore, a backlog of bilirubin builds up in the blood awaiting the liver cells to process it. This increased amount of bilirubin then spills into the tissues of the body to cause jaundice. Conditions that cause an increased rate of breakdown of red blood cells include:

- Some genetic diseases, such as [sickle cell anaemia](#), [thalassaemia](#), [spherocytosis](#), and [glucose 6-phosphate dehydrogenase deficiency](#). Genetic means that the condition is passed on through families through special codes inside cells called genes.
- Haemolytic uraemic syndrome.
- [Malaria](#).

## Conditions affecting the liver cells

There are many conditions that affect the liver cells.

- In some conditions the liver cells are unable to take in the bilirubin very well, so bilirubin builds up in the bloodstream.
- Sometimes there is a problem with the chemicals (enzymes) within the liver cells that process the bilirubin.

- Sometimes there is a problem in the way the liver cells pass out the processed bilirubin into the bile ducts.
- Sometimes, the liver cells are just damaged and all processes of the cell do not work well, or there are a reduced number of liver cells that are working.

With these problems, bilirubin may spill into the bloodstream to cause jaundice.

Conditions affecting liver cells that may cause jaundice include:

- **Hepatitis.** This means inflammation of the liver. There are many causes, such as:
  - Infection with one of the hepatitis viruses.
  - Some infections with germs (bacterial infections).
  - Alcoholic hepatitis.
  - Autoimmune hepatitis.
  - Inflammation caused by poisons or as a side-effect of some medicines.
- **Cirrhosis.** This is a condition where normal liver tissue is replaced by scar tissue (fibrosis). It tends to progress slowly and often does not cause symptoms in its early stages. However, as the function of the liver gradually becomes worse, serious problems can develop and jaundice may occur.
- **Inherited (hereditary) defects** in the enzymes that process bilirubin in liver cells. These include [Gilbert's syndrome](#), [Dubin-Johnson syndrome](#), [Crigler-Najjar syndrome](#) and [Rotor's syndrome](#). [Gilbert's syndrome](#) is very common, affecting about 1 in 20 people. It typically causes only very mild jaundice from time to time. The other hereditary defects are rare.

## Conditions affecting the tiny bile ducts

If the tiny bile ducts within the liver become damaged or narrowed then the flow of bile is restricted. A backlog of bile (which contains bilirubin) then spills into the bloodstream. Various conditions can affect or damage the bile ducts in this way. For example, [primary biliary cirrhosis](#), [primary sclerosing cholangitis](#) and as a side-effect of some medicines.

## Conditions affecting the common bile duct